

23 February 2011

0321.68812

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Michael J. Sailor
Serial No.:	10/589,741
Conf. No.:	9856
Filed:	8/16/2006
For:	OPTICALLY ENCODED PARTICLES WITH GREY SCALE SPECTRA
Art Unit:	2876
Examiner:	Michael S. Andler

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF PRIOR INVENTION TO OVERCOME

SAILOR U.S. PUBLISHED APPLICATION WO 2003/067231 (37 C.F.R. §1.131)

PURPOSE OF DECLARATION

This Declaration is to establish completion of the invention as claimed in at least claim 18 of this application in the United States at a date prior to August 14, 2003, which is the date of publication of WO 2003/067231. The person making this Declaration is an inventor.

DECLARATION

1. I am a named inventor in the present patent application, and have personal knowledge of the facts stated herein.

2. I am Professor of Chemistry and Biochemistry and Bioengineering at the University of California, San Diego. I hold a B.S. degree in Chemistry from Harvey Mudd College, and M.S. and Ph.D. degrees in Chemistry from Northwestern University.

3. The invention as claimed in at least claim 18 was completed before August 14, 2003.

4. The invention claimed in the present application in at least claim 18 was completed and conducted in experiments that produced grey scale photonic particles prior to August 14, 2003.

5. Specifically, the present application describes experiments on pages 6-7 with the following paragraph "Experiments were conducted to demonstrate the invention. Grey scale samples were prepared by anodically etching p⁺⁺ type, B-dope, (100) oriented silicon with <1mOhm-cm resistivity in a solution of 3:1 HF (48%, aq)/ethanol by volume. Computer generated anodic current waveforms consistent with the above explanations for grey scale coding were applied and a platinum mesh electrode was used as the counter electrode. Results were consistent with expectations." These experiments were completed on July 9, 2003. An excerpt from the invention disclosure that my co-inventor, Shawn Meade, and I signed on August 14, 2003 indicating the

reduction to practice by July 9, 2003 is shown below.

EVENTS	DATE	INDICATE THE WRITTEN RECORD (e.g., notebook, letter, email). IF ORAL DISCLOSURE, INDICATE TO WHOM.
1. Initial conception of the idea	8/28/03	Notebook #1 of Shawn Meade
2. First description of complete invention, oral or written	8/28/03	Notebook #1 of Shawn Meade
3. First successful demonstration (first actual reduction to practice)	7/29/03	Notebook #1 of Shawn Meade
4. Has this work been: a. submitted for publication? <input type="checkbox"/> N b. accepted for publication? <input type="checkbox"/> N c. Published? <input type="checkbox"/> N		
5. Have you presented this work at a conference or meeting? a. Did you submit an abstract? <input type="checkbox"/> N b. Was abstract published? <input type="checkbox"/> N c. Name of conference or meeting? <input type="checkbox"/> N d. Did presentation include handouts? <input type="checkbox"/> N		

G. INVENTORS' SIGNATURES

By signature below, I acknowledge my responsibilities and rights to royalty-sharing under the current University of California Patent Policy.

Shawn Meade
 Inventor signature

8/14/03
 Date

[Signature]
 Inventor signature

8/14/03
 Date

 Inventor signature

 Date

H. WITNESS - invention disclosed to and understood by:

[Signature]
 Witness signature

8/14/03
 Date

Haohao Lin
 Print witness name

6. The following data was taken from the reduction to practice that was completed on July 9, 2003 for samples with two spectral line radiometric grey scale coding.

```

t = 0.2*pi*(270000y/5512*pi);

A1max = 0.050;
A2max = 0.040;

Amin = 0.015;

k_1 = 1.5;
k_2 = 0.80;

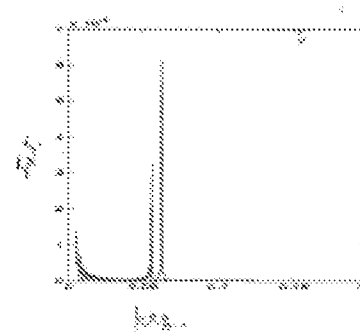
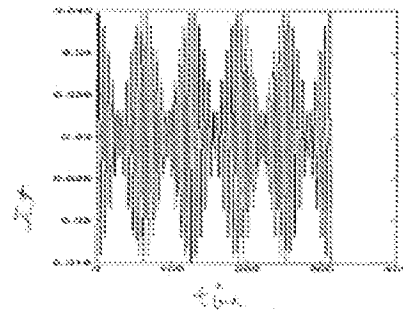
A1 = (A1max - Amin)/2;
A2 = (A2max - Amin)/2;

y1 = A1 * (sin(0.1*pi + 1.5*pi) + 1) + Amin;
y2 = A2 * (sin(0.2*pi + 1.5*pi) + 1) + Amin;

y = y1 + y2/2;
figure(1);
subplot(1,2,1);
plot(1,y);

SFFT
Y = fft(y,2000000);
Pyy = 0.00001*abs(Y).^2/(2000000);
f = 1000*(1:250)/2000000;
subplot(1,2,2);
plot(f,Pyy(1:250));

```



Sample	wf	A1max	A2max	L1	L2	I1	I2	A1/A2	I/I2	L1/L2
W15_14	122	45	40	573.8	614.88	2484	2890	1	0.87	0.8331688
W15_17	120	45	40	593.53	598.75	2747	2930	1.125		0.8344867
W15_18	123	45	35	542.18	579.51	2222	2690	1.2607		0.824838
W15_19	124	45	35	582.55	522.57	848	2030	1.8		0.44217
W15_18	128	55	40	580.81	624.58	3450	2690	1.25	1.18	0.831892
W15_19	127	55	35	580.95	634.58	3430	2690	1.07	1.38	0.830015
W15_20	128	60	30	578.51	622.27	3480	1880	2	1.84	0.831927

7. The following data was taken from the reduction to practice that was completed on July 9, 2003 for samples with ten spectral line radiometric grey scale coding.

```
%Individual sine components
y1 = A1 * [sin(k_1*t + 3/4*pi) + 1] * Amax;
y2 = A2 * [sin(k_2*t + 3/4*pi) + 1] * Amax;
y3 = A3 * [sin(k_3*t + 3/4*pi) + 1] * Amax;
y4 = A4 * [sin(k_4*t + 3/4*pi) + 1] * Amax;
y5 = A5 * [sin(k_5*t + 3/4*pi) + 1] * Amax;
y6 = A6 * [sin(k_6*t + 3/4*pi) + 1] * Amax;
y7 = A7 * [sin(k_7*t + 3/4*pi) + 1] * Amax;
y8 = A8 * [sin(k_8*t + 3/4*pi) + 1] * Amax;
y9 = A9 * [sin(k_9*t + 3/4*pi) + 1] * Amax;
y10 = A10 * [sin(k_10*t + 3/4*pi) + 1] * Amax;
```

```
% Composite Waveform (Average of all sine components)
y = (y1 + y2 + y3 + y4 + y5 + y6 + y7 + y8 + y9 + y10)/10;
```

```
figure(2);
plot(y);
```

```
%File Saving Protocol, generates 10 column vector text file
num = size(y);
fid = fopen('wf_2000.txt','w');
for i = 1:num
    fprintf(fid,'%16.4f\n',y(i));
end
fclose(fid);
```

```
save('y.mat','y');
%y = 80000000;
%y = 0.0001*(y.*cos(y)/2000000);
t = 1000*(1:200)/200000;
figure(3);
plot(t,Psy(1:200,1));
```

Ten Spectral Line Waveform Parameters

Amaz (see table below)

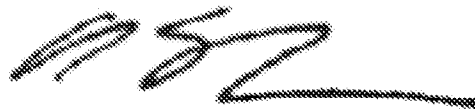
Amaz = 0.02

k_1 to k_10 = 2.2 to 1.3, respectively, with 0.1 spacing
phase offset = 3/4 pi

Waveform	Sample	A1 max	A2 max	A3 max	A4 max	A5 max	A6 max	A7 max	A8 max	A9 max	A10 max	Avg Amaz
wf_200	4113.2	0.1299	0.1300	0.1301	0.1302	0.1303	0.1304	0.1305	0.1306	0.1307	0.1308	0.1309
wf_200	4113.3	0.1297	0.1302	0.1303	0.1302	0.1303	0.1303	0.1303	0.1303	0.1303	0.1303	0.1303
wf_200	4113.4	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300
wf_270	4113.7	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300	0.1300
wf_271	4113.9	0.1300	0.1301	0.1301	0.1301	0.1301	0.1301	0.1301	0.1301	0.1301	0.1301	0.1301

8. As a person signing below, I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under 18 U.S.C. §1001, and that such willful statements may jeopardize the validity of this application or any patent issued thereon.

Declarant's Signature:



Michael J. Sailor

Date:

Friday, January 7, 2011

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La Jolla, CA 92122

Citizenship:

USA